

REMARKS/ARGUMENTS

Claims 1-6, 16, 17, 19, 21-22 and 24-27 have been resubmitted. Claims 1, 2, 16, 19, 21 and 24-27 have been amended. Claims 7-15, 18, 20, 23, 28-35 have been withdrawn.

The Examiner has rejected Claims 1, 3-6 and 16-17 under 35 U.S.C. Section 103(a) as being unpatentable in view of the admitted prior art and Schmidt. The Examiner has further rejected Claims 1-2, 3-6 and 16-17 under 35 U.S.C. Section 103(a) as being unpatentable in view of Schmidt and Ohta, Miwa or Tanabe. The Examiner has further rejected Claims 21, 22 and 25-26 under 35 U.S.C. Section 103(a) as being unpatentable in view of the admitted prior art and Schmidt and further in view of Iszczyszyn.

Examiner has objected to Claims 25-26 for an informality. The Examiner objected to Claims 19, 24 and 27 for being dependant upon a rejected base claim but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims

Examiner Interview

Applicants thank the Examiner for the telephone conference with Applicants' representative on May 25, 2005. During the telephone conference, the Examiner and Applicants' representative discussed the objections to claims 25-26, the objections to claims 19, 24 and 27 and the rejections of claims 1-6, 16-17, 21-22, 25-26 under 35 U.S.C. Section 103(a). Also discussed were the references U.S. Patent No. 6,849,150 (Schmidt), U.S. Patent No. 4,981,753 (Ohta), U.S. Patent No. 5,939,007 (Iszczyszyn), U.S. Patent No. 5,648,424 (Miwa) and Tanabe et al. (JP 11207868). No agreement was reached.

Schmidt

The Schmidt reference is directed towards a system for forming structural assemblies with 3-D woven joint pre-forms. The method is used for forming complex structural assemblies with pre-formed structures. Adhesive is applied between the preformed structures and uncured 3-D woven textile pre-forms. Together the preformed structures and uncured resin impregnated 3-D woven textile are cured with heat and/or pressure to form the larger complex structural assemblies.

The Schmidt reference and the admitted prior art, however, do not disclose the element of a rigid sheet that is placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object when it is cured, as claimed in amended independent claims 1, 16 and 21.

The concept of a rigid sheet being placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object is discussed on page 6 lines 13-29 of Applicants' application, reproduced in relevant part below:

"The gas-impermeable bag 18 is in contact with the sheet 14 such that the gas-impermeable bag 18 applies a force on the sheet 14 towards the curing wing panel 12. The sheet 14 extends from the stringer base 24 to the gas-impermeable bag 18 along the surface 34 of the wing panel. The pressure differential between the auto-clave pressure and the pressure within the gas-impermeable bag 18 causes the gas-impermeable bag 18 to exert force on the sheet 14 towards the curing wing panel 12. The sheet 14 resists bending by the low-pressure volume 28 contained within the bridging, such that the sheet 14

applies pressure on the curing wing panel 12. Thus, the sheet 14 prevents undulations - such as the undulation 30 shown in Figure 2 - from occurring in the curing wing panel 12.

Referring to FIG. 5, in another embodiment, the gas-impermeable bag 18 does not contact the sheet 14 during the curing process, such that the gas-impermeable bag 18 does not apply a force on the sheet 14 towards the curing wing panel 12. The thickness of the sheet 14 is sufficient to resist bending by the low-pressure volume 28 contained within the bridging 26, such that the sheet 14 applies pressure on the wing panel 12 as the wing panel 12 cures. (Emphasis added)”

Therefore, Schmidt does not make obvious the present invention, either alone or with the other references of record.

Ohta, Miwa and Tanabe

The Ohta, Miwa and Tanabe references are presented solely for the purpose of showing evidence of a relationship between a low coefficient of thermal expansion resulting in improved/high dimensional stability. See Examiner's Office Action at page 5.

The Ohta reference is directed towards fabric for a printed circuit substrate composed essentially of inorganic fibers having a non-circular cross section. The fibers provide a printed circuit substrate having dimensional stability when molded together with a resin into a printed circuit substrate.

The Miwa reference is directed towards a molded product of a thermoplastic resin composition including a non-crystalline thermoplastic resin, a crystalline thermoplastic resin and an inorganic filler. A portion of the product

includes a non-crystalline resin that takes a structure forming a matrix and a portion of the product includes a crystalline resin that takes a structure forming a matrix coexist.

The Tanabe reference is directed towards a thermosetting resin composition including a firm forming straight chain epoxy polymer, a thermosetting resin and electrically insulating whiskers. The resin is used as an adhesive sheet, an adhesive bearing metallic foil and a metallic foil spread laminated plate.

The Ohta, Miwa and Tanabe references are directed towards art that is not related to the vacuum bag molding art of the Applicants' invention. The Ohta, Miwa and Tanabe references do not disclose the element of a rigid sheet that is placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object when it is cured, as claimed in amended independent claims 1, 16 and 21. See above for an excerpt from Applicants' specification describing a rigid sheet that is placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object when it is cured.

Therefore, the Ohta, Miwa and Tanabe references do not make obvious the present invention, either alone or with the other references of record.

Iszczyszyn

The Iszczyszyn reference is directed towards a method for manufacture of a fiber reinforced composite spar for a helicopter rotor blade including upper and lower sidewall regions and forward and aft conic regions. Constant width crossplies and unidirectional plies are stacked and arranged to form crossply

and unidirectional laminates. The composite spar is manufactured via a vacuum forming technique which includes forming the composite laminates directly over an inflatable mandrel assembly. Regarding the latter method, a spar forming apparatus is used to position and manipulate the mandrel assembly as composite laminates are laid. The spar forming apparatus includes first and second pedestal supports being suitably configured so as to facilitate formation of the butt joints in the conic regions of the composite spar. The pedestal supports are movable from a first orientation to facilitate lay-up of composite laminates over the mandrel assembly, to a second orientation to facilitate transfer of the mandrel assembly from one to the other of the pedestal supports. The spar forming apparatus further includes an electromagnetic coil system that accurately positions the inflatable mandrel assembly during lay-up of the composite laminates and effects transfer of the mandrel assembly.

The Iszczyszyn reference, however, does not disclose the element of a rigid sheet that is placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object when it is cured, as claimed in amended independent claims 1, 16 and 21. See above for an excerpt from Applicants' specification describing a rigid sheet that is placed adjacent to a malleable portion of an object, wherein the rigid sheet resists bending so as to eliminate the creation of undulations in the object when it is cured.

Therefore, the Iszczyszyn reference does not make obvious the present invention, either alone or with the other references of record.

Objection to Claims 25-26

The Examiner objected to Claims 25-26 for an informality. Applicants have amended these claims as suggested by the Examiner.

Objection to Claims 19, 24 and 27

The Examiner objected to Claims 19, 24 and 27 for being dependant upon a rejected base claim but indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The Applicants thank the Examiner for this statement of allowability. Applicants have amended claims 19, 24 and 27 as suggested by the Examiner.

CONCLUSION

Reconsideration and withdrawal of the Office Action with respect to Claims 1-6, 16-17, 21-22 and 25-26 are requested. Applicants submit that the claims are now in condition for allowance.

In the event the examiner wishes to discuss any aspect of this response, please contact the attorney at the telephone number identified below.

Respectfully submitted,

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